EXHAUST SYSTEM COMPONENTS, REMOVING AND INSTALLING

NOTE:

- **Removing and installing exhaust manifold. See TURBOCHARGER SYSTEM COMPONENTS, REMOVING AND INSTALLING .**
- **After working on the exhaust system make sure that the system is not under stress, and that there is sufficient clearance from the bodywork. If necessary, loosen double and single clamps and align muffler and exhaust pipe so that sufficient clearance is maintained to the bodywork and the support rings are evenly loaded.**
- **Replace self-locking nuts.**

FRONT EXHAUST PIPE AND CATALYST WITH COMPONENTS

NOTE: The following list refers to items in Fig. 1 .

1. **From turbocharger**
2. **Seal**
   - Always replace
3. **25 N.m**
   - Always replace
   - Oil threaded studs with G 052 112 A3
4. **Front exhaust pipe with catalytic converter**
5. **To rear muffler**
6. **Connector**
   - Connection in protective housing, on vehicle underside right side
7. **Mounting**
8. **25 N.m**
9. **Heated Oxygen Sensor (HO2S) -G39-, 50 N.m**
   - Grease only threads with hot bolt paste G 052 112 A3 (anti-seize compound). Grease must not get into slots on sensor body
   - Remove and install with 3337
   - To remove, separate connection and move wiring aside

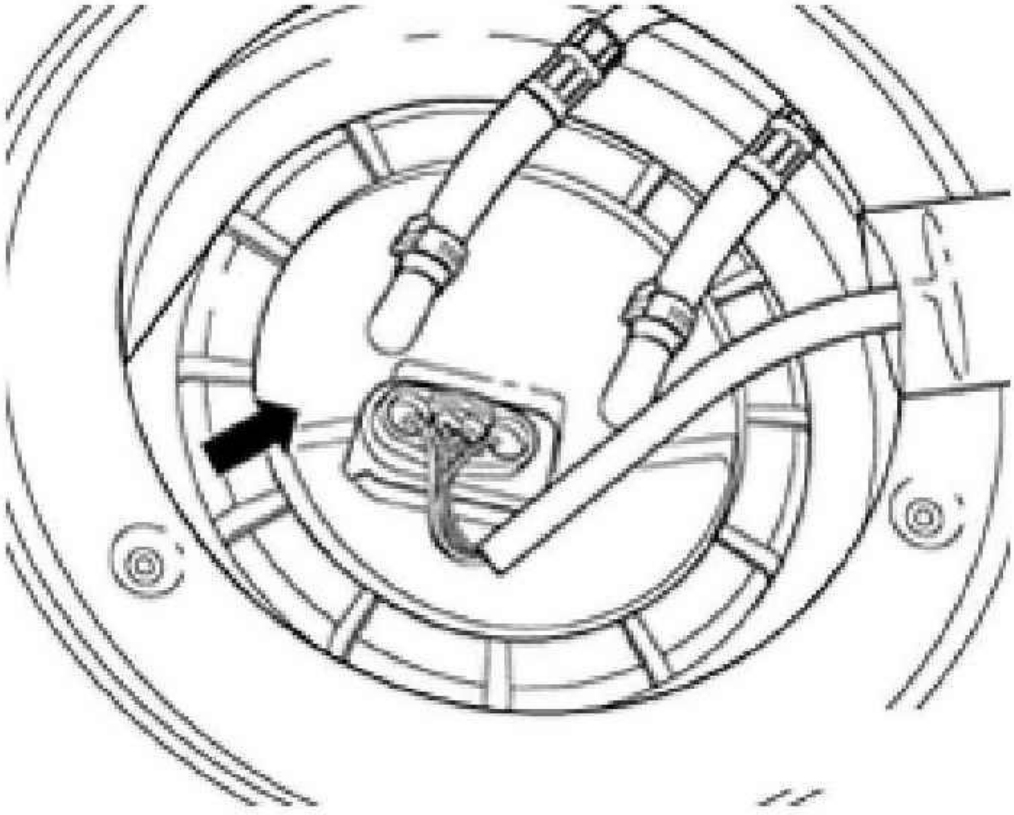

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Fig. 1: Front Exhaust Pipe And Catalyst With Components
Courtesy of VOLKSWAGEN OF AMERICA, INC.

MUFFLER WITH MOUNTINGS

NOTE: The following list refers to items in Fig. 2 .

1. From catalytic converter
2. **Double clamp**
   - Note installation position. See **Fig. 3** .
3. **25 N.m**
4. **Mounting**
   - Note installation position. See **Fig. 4** .
5. **Separating point**

- For repair cases.
- Marked by three impressions on circumference of exhaust pipe
- As standard, exhaust pipe and rear mufflers are installed as a single component. In repair cases exhaust pipe and rear muffler are supplied individually with a double clamp for connecting together.
- Cut through connecting pipe with body saw e.g. V.A.G 1523 at right angles at separating point. See **Fig. 5** .

6. **Bracket**
   - With suspension
7. **Muffler**
   - Aligning rear muffler free of stress. See **Fig. 7** .
8. **Mounting**
   - With retaining ring.
9. **20 N.m**
10. **Tunnel bridge**
11. **40 N.m**

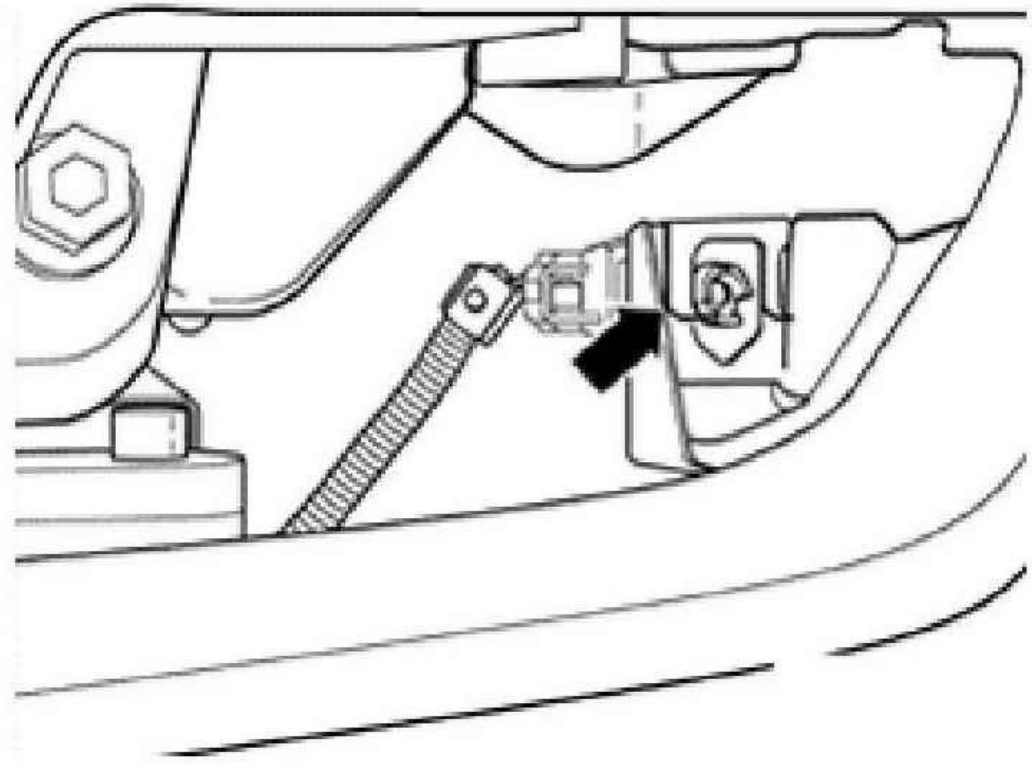

Fig. 2: Identifying Muffler With Mountings
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Double clamp, installation position

Fig. 3: Identifying Double Clamp Installation Position
Courtesy of VOLKSWAGEN OF AMERICA, INC.

- Position double clamp approx. 5 mm from mark A (arrow -2-).

NOTE:

- **Mark "A" (arrow -2-) is valid for vehicles with manual and automatic transmissions.**
- **Mark "S" (arrow -1-) is not valid for this engine.**

Mounting, installation position

Fig. 4: Identifying Mounting, Installation Position
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Angled side on base of mounting (arrow) points forward.

Exhaust pipe, separating point

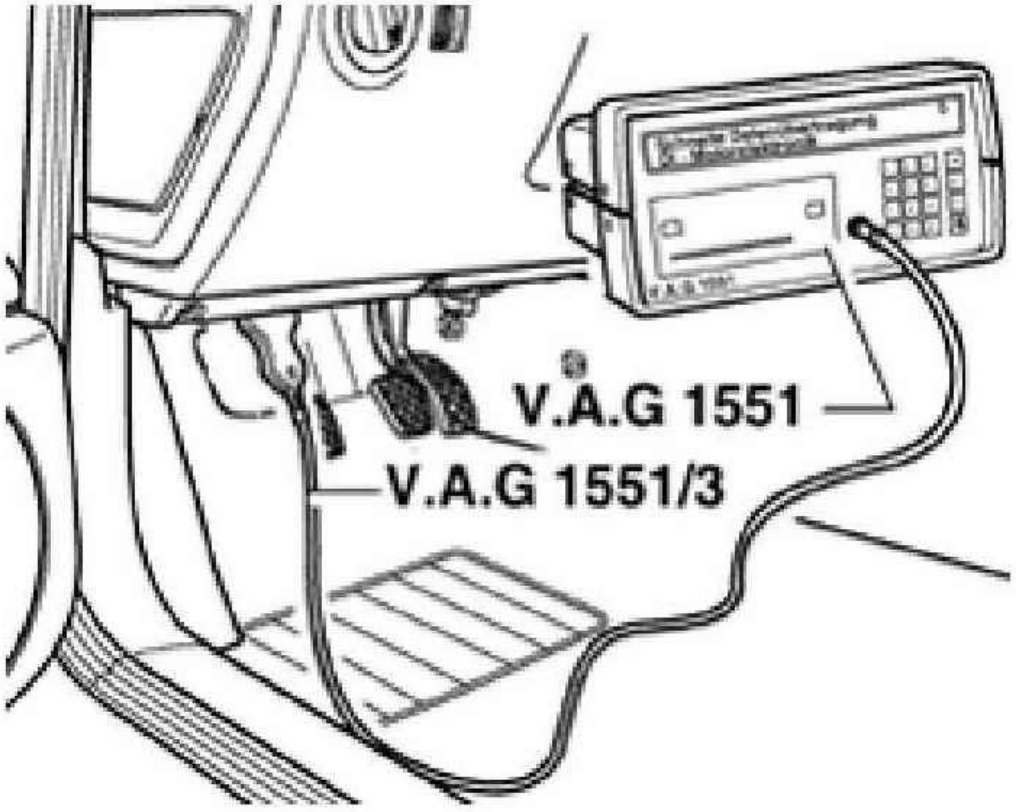

Fig. 5: Identifying Exhaust Pipe, Separating Point
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Special tools and equipment

- Body saw e.g. V.A.G 1523
  - Separate exhaust pipe at right angles at separating point (arrow -2-).
  - When installing, position double clamp -4- on side markings (arrows -1- and -3-).

    Tightening torque: 40 N.m

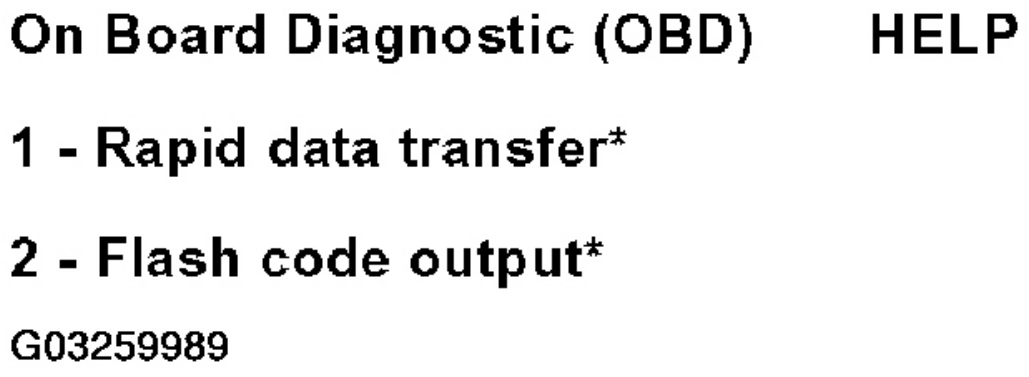

Fig. 6: Positioning Double Clamp On Side Markings While Installing
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Aligning rear muffler free of stress

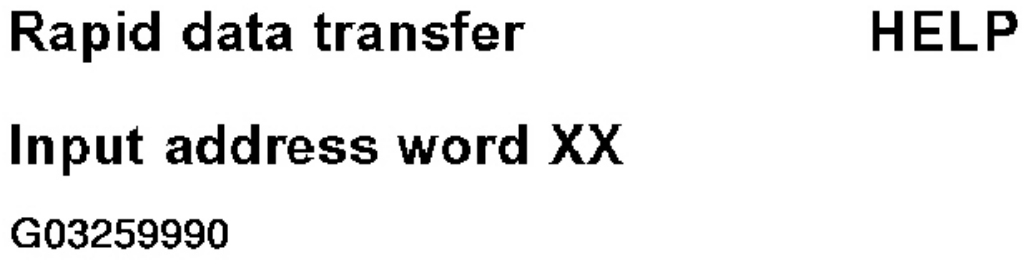

Fig. 7: Aligning Rear Muffler Free Of Stress
Courtesy of VOLKSWAGEN OF AMERICA, INC.

The mounting pins on exhaust pipe must run parallel with tunnel bridge (dimension -x- on left and right the same).

EXHAUST GAS RECIRCULATION SYSTEM

NOTE:

- **The function/control of the exhaust gas recirculation system is undertaken by Diesel Direct Fuel Injection (DFI) Engine Control Module (ECM) -J248- via EGR Vacuum Regulator Solenoid Valve -N18-.**

- **Pulsed control makes every conceivable valve position possible.**
- **Replace self-locking nuts.**
- **Vacuum hose connection diagram. See VACUUM HOSE CONNECTION DIAGRAM .**
- **Coolant hose connection diagram. See COOLANT HOSE CONNECTION DIAGRAM .**

EXHAUST GAS RECIRCULATION SYSTEM COMPONENTS, REMOVING AND INSTALLING

NOTE: The following list refers to items in Fig. 8 .

1. **Bracket**
   - For bypass flap for exhaust gas recirculation cooler
2. **22 N.m**
3. **5 N.m**
4. **Intake manifold**
   - With Motor for intake flap -V157-
5. **O-ring**
   - Always replace
6. **EGR Vacuum Regulator Solenoid Valve -N18-**
   - Removing and installing. See **EGR VACUUM REGULATOR SOLENOID VALVE -N18- ,REMOVING AND INSTALLING**
7. **10 N.m**
8. **Seal**
   - Always replace
9. **Connecting pipe**
10. **Radiator**
    - For exhaust gas recirculation
    - Installing. See **EXHAUST GAS RECIRCULATION COOLER, INSTALLING** .
    - Coolant hose connection diagram. See **COOLANT HOSE CONNECTION DIAGRAM** .
11. **Exhaust manifold**
    - Can only be replaced completely with turbocharger
    - Removing and installing. See **TURBOCHARGER SYSTEM COMPONENTS, REMOVING AND INSTALLING** .
12. **Seal**
    - Always replace
13. **Connecting pipe**
14. **Seal**
    - Always replace

15. **Bypass flap**
    - Vacuum hoses for connection diagram. See **VACUUM HOSE CONNECTION DIAGRAM** .
    - Coolant hose connection diagram. See **COOLANT HOSE CONNECTION DIAGRAM** .
    - Installing. See **EXHAUST GAS RECIRCULATION COOLER, INSTALLING** .

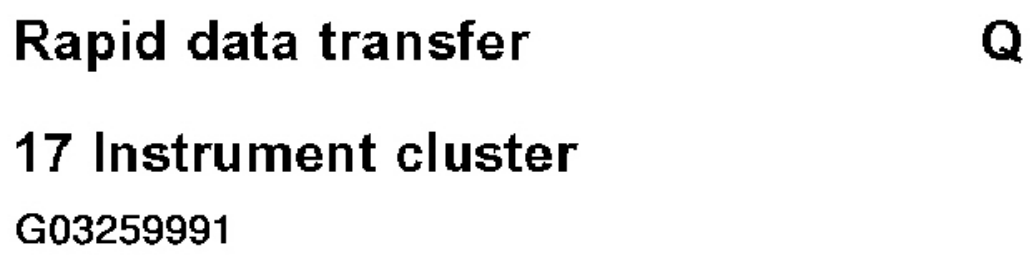

Fig. 8: Exploded View Of Intake Manifold, Exhaust Manifold & Exhaust Gas Recirculation System Components
Courtesy of VOLKSWAGEN OF AMERICA, INC.

EXHAUST GAS RECIRCULATION COOLER, INSTALLING

Special tools and equipment

- V.A.G 1331 Torque wrench (5 to 50 N.m)

NOTE: **Description of repair must be observed in order to avoid damages caused by stress.**

Fig. 9: Identifying V.A.G 1331 Torque Wrench

Courtesy of VOLKSWAGEN OF AMERICA, INC.

- Assemble bypass flap -1- with sealing ring -2- and two screws -5- with exhaust gas heat exchanger -3- and tighten these screws.
- Install four screws -4- and tighten all screws to 10 N.m.

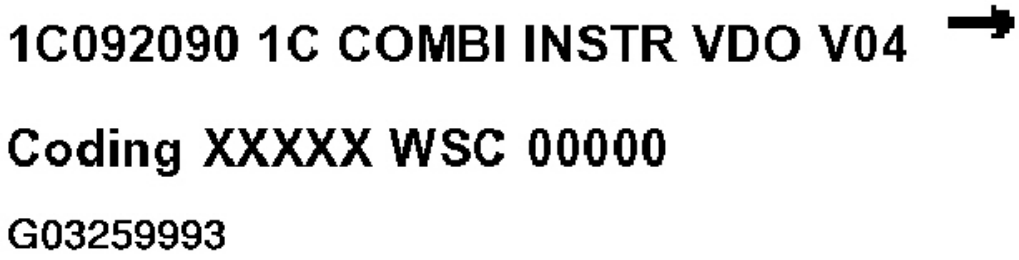

Fig. 10: Assembling Bypass Flap With Sealing Ring And Two Screws
Courtesy of VOLKSWAGEN OF AMERICA, INC.

- Hand-tighten exhaust gas recirculation radiator -7- with three screws -8- to intake manifold -6- (exhaust gas recirculation radiator must lie against and must be moveable in threaded joints).
- Install screws -9- and tighten to 10 N.m.
- Tighten bolts/screws -8- to 10 N.m.

Fig. 11: Hand-Tightening Exhaust Gas Recirculation Radiator With Three Screws To Intake Manifold
Courtesy of VOLKSWAGEN OF AMERICA, INC.

- Hand-tighten connecting pipe -15- with seals, two screws -14- and screw -16-. See **Fig. 12** .
- Hand-tighten bracket -12- with screws -11 - and -13- to bypass-flap.
- Install bracket -12- with screw -10- to intake manifold and tighten screw to 10 N.m.

- Tighten screw -11 - to 22 N.m.
- Tighten screw -13- to 5 N.m.
- Tighten screws -14- and -16- to 22 N.m.

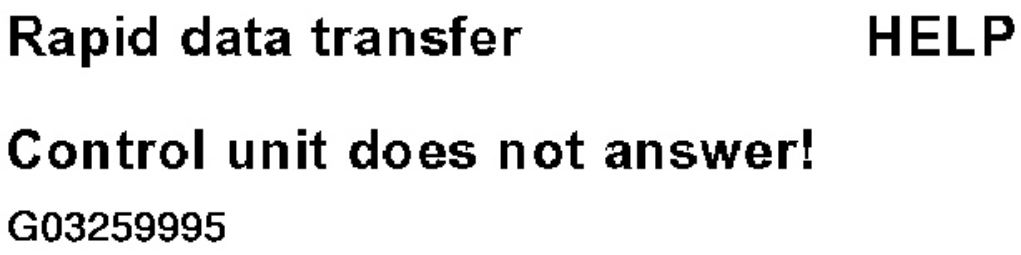

Fig. 12: Hand-Tightening Connecting Pipe With Seals, Two Screws And Screw
Courtesy of VOLKSWAGEN OF AMERICA, INC.

- Install connecting pipe -18- from heat exchanger for exhaust gas recirculation -16- to exhaust manifold -17-.
- Tighten bolts and nuts to 22 N.m.

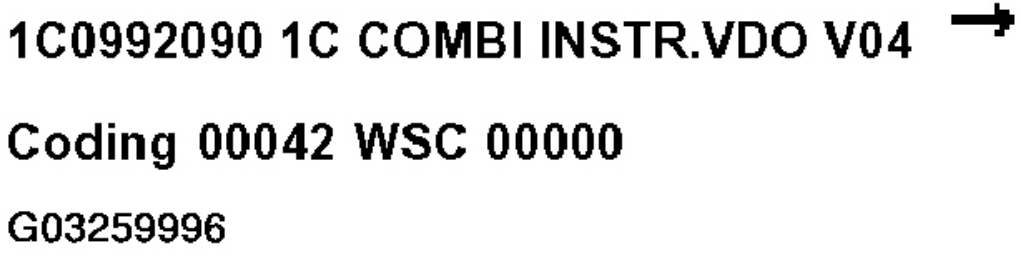

Fig. 13: Installing Connecting Pipe From Heat Exchanger For Exhaust Gas Recirculation To Exhaust Manifold
Courtesy of VOLKSWAGEN OF AMERICA, INC.

EGR VACUUM REGULATOR SOLENOID VALVE -N18-, REMOVING AND INSTALLING

Special tools and equipment

- V.A.G 1331 Torque wrench (5 to 50 N.m)
- VAS 5128 Wet and dry cleaner
- Brush with plastic bristles

Fig. 14: Identifying V.A.G 1331 Torque Wrench
Courtesy of VOLKSWAGEN OF AMERICA, INC.

NOTE: To avoid damage to exhaust gas recirculation valve do not use solvents, fuel or sharp-edged tools or tools made out of metal to clean.

- Disconnect connector from exhaust gas recirculation valve and remove securing bolts.
- Pull valve carefully out of seat.

NOTE: For protection against soot particles, cover intake manifold inner part with a lint-free cloth.

- Clean sooted surfaces with a plastic brush. Afterward, remove loose soot with a cloth.
- Clean exhaust gas recirculation valve seat in intake manifold with a plastic brush and a cloth. Make sure that no soot particles enter intake manifold.
- Take cloth out of intake manifold and clean intake manifold with a vacuum cleaner, if necessary.
- Replace O-ring.
- Insert valve carefully into seat in intake manifold and tighten screws to 10 N.m.